defined as coarse toner particles, and the isolated toner was defined as a normal toner. After drying, a toner actual yield was measured.

**[0058]** The results of evaluation performed on the PSFCs of Examples 1 to 9 and Comparative Examples 1 to 7 are shown in Table 2.

TABLE 2

| | $Log_eT - (11.7 - 3.0 \times pH - 2.6 \times log_e 2.139C)$ | Stability (day) | PSFC yield (wt %) | Viscosity of toner emulsion aggregation reaction solution (cps) | Amount of coarse toner particles produced (wt %) | Toner preparation yield (wt %) |
|---|---|---|---|---|---|---|
| Comparative Example 1 | 6.92 | 8 | 98 | 262 | 17.0 | 81 |
| Comparative Example 2 | 6.82 | 6 | 98 | 251 | 16.0 | 82 |
| Comparative Example 3 | 6.74 | 10 | 98 | 251 | 16.0 | 82 |
| Comparative Example 4 | 6.73 | 7 | 98 | 252 | 17.0 | 81 |
| Example 1 | 6.65 | 5 | 97 | 215 | 7.0 | 90 |
| Example 2 | 6.51 | 21 | 97 | 220 | 4.0 | 93 |
| Example 3 | 6.42 | 21 | 97 | 221 | 4.0 | 93 |
| Example 4 | 6.33 | 21 | 97 | 222 | 4.0 | 93 |
| Example 5 | 6.32 | 21 | 97 | 222 | 4.0 | 93 |
| Example 6 | 6.29 | 21 | 96 | 220 | 4.0 | 92 |
| Example 7 | 6.22 | 21 | 96 | 210 | 4.0 | 92 |
| Comparative Example 5 | 6.14 | 30 | 85 | 92 | 3.0 | 82 |
| Example 8 | 6.01 | 21 | 97 | 219 | 4.0 | 93 |
| Example 9 | 5.93 | 25 | 95 | 200 | 7.0 | 88 |
| Comparative Example 6 | 5.82 | 30 | 85 | 90 | 3.0 | 82 |
| Comparative Example 7 | 5.72 | 30 | 85 | 91 | 3.0 | 82 |

**[0059]** As shown in Table 2, the PSFCs prepared in Examples 1 to 9 that satisfy the condition of Formula 1 ($log_e T-(11.7-3.0\times pH-2.6\times log_e 2.139C)\leq 6.65$) had rapidly improved toner preparation yield compared to those of the coagulants prepared in Comparative Examples 1 to 4 that do not satisfy the condition of Formula 1. Also, the PSFCs prepared in Examples 1 to 9 that satisfy the condition of Formula 2 ($5.93\leq log_e T-(11.7-3.0\times pH-2.6\times log_e 2.139C)\leq 6.65$) had rapidly improved toner preparation yield compared to those of the coagulants prepared in Comparative Examples 6 and 7 that do not satisfy the condition of Formula 2. When the condition of Formula 2 was satisfied, an exceptional case in which the toner preparation yield rapidly decreased occurred (e.g., Comparative Example 5). However, when the condition of Formula 3 ($6.20\leq log_e T-(11.7-3.0\times pH-2.6\times log_e 2.139C)\leq 6.65$) was satisfied (Examples 1 to 7), any exceptional case in which the toner preparation yield rapidly decreased did not occur.

**[0060]** According to one or more embodiments described above, a PSFC for a toner significantly exhibits controlled aggregating strength, and thus, allowing an emulsion aggregation reaction solution for toner preparation to have an appropriate viscosity, which results in minimizing production of fine toner particles and coarse toner particles, and thereby, improving a toner preparation yield.

**[0061]** It should be understood that embodiments described herein should be considered in a descriptive sense only and not for purposes of limitation. Descriptions of features or aspects within each embodiment should typically be considered as available for other similar features or aspects in other embodiments.

**[0062]** While one or more embodiments have been described with reference to the figures, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the spirit and scope as defined by the following claims and their equivalents.

What is claimed is:

**1**. A method of producing a coagulant, the method comprising:

providing a silicic acid aqueous solution having a silicon content, and polymerizing silicic acid in the silicic acid aqueous solution for a polymerization time to form a polymerized silicic acid; and

mixing iron ions and the polymerized silicic acid to produce the coagulant,

wherein the silicon content, a pH of the silicic acid aqueous solution at a start of the polymerizing, and the polymerization time satisfy Formula 1 below:

$$log_e T-(11.7-3.0\times pH-2.6\times log_e 2.139C)\leq 6.65 \quad \text{<Formula 1>}$$

where T is the polymerization time in hours, and C is the silicon content in wt % based on 100 wt % of a total weight of the silicic acid aqueous solution.

**2**. The method of claim **1**, wherein the silicon content, the pH, and the polymerization time satisfy Formula 2 below:

$$5.93\ log_e T-(11.7-3.0\times pH-2.6\times log_e 2.139C)\leq 6.65 \quad \text{<Formula 2>}.$$

**3**. The method of claim **1**, wherein the silicon content, the pH, and the polymerization time satisfy Formula 3 below:

$$6.20\ log_e T-(11.7-3.0\times pH-2.6\times log_e 2.139C)\leq 6.65 \quad \text{<Formula 3>}.$$

**4**. The method of claim **1**, wherein the silicon content is in a range of about 0.2 wt % to about 7.0 wt % based on 100 wt % of the total weight of the silicic acid aqueous solution.